In the Claims:

1. (Currently Amended) A system for automatic process control of a process having an input space comprising input boundaries, the system comprising:

a measurement unit for ~~taking measurements~~ measuring outputs of ~~said~~ the process at ~~selected~~ points of ~~said~~ the input space,

a controller, controllably associated with ~~said~~ the input space, for selecting ~~said~~ points of ~~said~~ the input space such as to maximize information about ~~said~~ the input space from a predetermined number of said points, and

a regressor for obtaining a predictive model of ~~said~~ the process configured to produce predicted outputs over ~~said~~ the input space by regression from said measured outputs ~~measurements~~, thereby to provide ~~said~~ the automatic process control.

2. (Previously Presented) A system according to claim 1, wherein said predictive model comprises a first formula describing the process.

3. (Currently Amended) A system according to claim 2, wherein said points comprise at least input boundaries of ~~said~~ the process.

4. (Currently Amended) A system according to claim 3, wherein said points comprise further desired points across ~~said~~ the input space.

5. (Currently Amended) A system according to claim 4, wherein said points are definable by a geometric spacing across ~~said~~ the input space.

6. (Currently Amended) A system according to claim 5, wherein said geometric spacing is selectable to give an even spread of points across ~~said~~ the input space.

7. (Original) A system according to claim 5, wherein said geometric spacing is selectable to cover at least the input boundaries and a center of the input space.

8. (Original) A system according to claim 5, wherein said geomctric spacing is in accordance with DOE predetermined placing rules.

9. (Previously Presented) A system according to claim 2, wherein said predictive model is any one of a group comprising a linear formula, a linear formula with interaction between inputs, a quadratic formula and a quadratic formula with interaction between inputs.

10. (Currently Amended) A system according to claim 1, wherein ~~said~~ the input space is divisible into discrete regions;~~and~~

wherein said ~~empirical~~ predictive model comprises predicted ~~process~~ outputs associated with each discrete region; and

wherein said predictive model is configured to return, for a given discrete region, both said predicted outputs and actual outputs measured for said given discrete region when the continuous process is running, thus improving the quality of outputs returned.

11. and 12. (Canceled).

13. (Currently Amended) A system according to claim 10, further having an empirical results quantity assessor for interchanging ~~results produced by said predictive model~~ predicted outputs with ~~results obtained from running said process~~ actual outputs when said ~~results obtained from running said process~~ actual outputs are assessed to be statistically significant according to at least one predetermined criterion of significance.

14. (Currently Amended) A system according to claim 10, having a prediction quality assessor for interchanging ~~results obtained by running said the process~~ said actual outputs with ~~results obtained from said predictive model~~ said predicted outputs when ~~a prediction of said predictive model is~~ said predicted outputs are assessed to diverge significantly from an outcome of ~~said~~ the process according to at least one predetermined criterion of significance.

15. (Currently Amended) A system for automatic control of a process, comprising:

a process model using data, said data including inputs and outputs; ~~and further comprising~~

a data model for generating data for said process model; ~~and~~ and

an empirical data extractor for extracting empirical data from ~~said~~ the process for said process model, ~~and~~

wherein ~~said data used by~~ said process model is configured to use said generated data and said empirical data interchangeably. ~~interchangeable between data obtained by said data model and data obtained by said extractor.~~

16. (Currently Amended) A system according to claim 15, further comprising a prediction quality assessor for interchanging results obtained by said extractor with results

obtained from said data model when a prediction of said process model is assessed to diverge significantly from an outcome of ~~said~~ the process according to at least one predetermined criterion of significance.

17. (Currently Amended) A system according to claim 15, further comprising an empirical results quantity assessor for interchanging results produced by said data model with results obtained by said extractor when results obtained from running ~~said~~ the process are assessed to be statistically significant according to at least one predetermined criterion of significance.

18. (Original) A system according to claim 15, wherein said process model is a lookup table.

19. (Currently Amended) A system according to claim 18 wherein said lookup table comprises output values for discrete regions of an input space within which ~~said~~ the process is operable.

20. (Currently Amended) A system according to claim 15, wherein said data model is a formula obtainable from outputs of ~~said~~ the process associated with geometrically spaced points of an input space within which ~~said~~ the process is operable.

21. (Original) A system according to claim 20, wherein said formula is any one of a group comprising a linear formula, a linear formula with interactions, a quadratic formula and a quadratic formula with interactions.

22. (Original) A system according to claim 20 wherein said geometrically spaced points are evenly distributable about said input space.

23. (Original) A system according to claim 20 wherein said geometrically spaced points comprise points placed on the boundaries of said input space and a point placed at a center of said input space.

24. (Currently Amended) A method of automatically controlling a process, using a data-based process model comprising the steps of

generating data for ~~said~~ the process model using a data generation formula, ~~and~~

controlling ~~said~~ the process using said generated data by ~~in said~~ the process model; and

wherein ~~said~~ the process has an input space and said data generation formula is obtained by running ~~said~~ the process at preselected points in said input space

wherein said preselected points are orthogonally placed in said input space.

25. and 26. (Canceled).

27. (Currently Amended) A method according to claim ~~25~~ 24, wherein said preselected points are evenly spaced in said input space.

28. (Currently Amended) A method according to claim ~~25~~ 24, wherein at least some of said preselected points are placed at boundaries and a center of said input space.

29. (Original) A method according to claim 24, further comprising a step of replacing said generated data with data empirically obtained during the running of the process.

30. (Currently Amended) A method according to claim 29, wherein said step of replacing said generated data is carried out when said empirically obtained data ~~obtained empirically~~ has reached a threshold of significance according to at least one predetermined significance criterion.

31. (Currently Amended) A method according to claim 29 further comprising a step of reverting to said generated data ~~generated~~ using a data generation formula.

32. (Currently Amended) A method according to claim 31, wherein said step of reverting is carried out when results predicted by ~~said~~ the data-based process model are detected to diverge from empirically measured process results by an amount exceeding a threshold of significance according to at least one predetermined significance criterion.

33. (Original) A method according to claim 25, comprising the steps of

building a formula for a first input space,

obtaining process output data for said first input space,

building a formula for a second input space,

obtaining process output data for said second input space,

comparing said process output data for said second input space with process output data for said first input space,

on the basis of said comparison selecting a third input space for obtaining process output data,

and operating said process in an optimal one of said input spaces.